

## **1. ABOUT FACULTY DEVELOPMENT PROGRAMME**

The objective of the programme is to up-grade the knowledge and to enhance the skills of teachers employed in various disciplines of science with a special focus on soft and functional materials, as it is the core of all science and engineering subjects. The FDP will cover common areas of interest to cater the need of faculty members across various disciplines. The academia, researchers and experts from industries will deliver talks to cover various aspects of soft and functional materials and explore their findings on novel functional properties of materials. Deliberations on computational methods such as molecular simulations, density functional theory and other emerging techniques will help faculty members to solve real problems in their respective fields. The FDP will focus on experimental, theoretical and simulation methods currently being widely used by leading scientists of the world. Many fold advancement in new experimental tools and techniques is leading to the exponential growth of science. Computational techniques help us to find new pathways. These methods and techniques give molecular scale insights into the problems, and help scientists to unravel new microscopic phenomena. The amalgam of academia, scientists and researchers from central universities, NIITs & IITs and other research organizations/ industries will offer participants an opportunity to interact with them.

- 2. Topics Covered :** Soft Materials: Synthesis Methods and Characterization, Applications, Functional Materials: Synthesis and Characterization, Applications, Bottom-up and Top-down Approaches, Novel Characterization Tools & Techniques, Transformation of ideas in making devices, Challenges due to the scalability, Current and future needs for Soft and Functional materials, Technology for mankind: Biomedical Applications (Imaging and drug delivery), Computational Methods and Techniques: Molecular Dynamic Simulation and Density Function Theory, Nanoscale Phenomena
- 3. Target Audience:** Regular and guest faculty members, Research Scholars in AICTE/UGC recognized institutions
- 4. Pre-requisites:** NONE
- 5. Time Frame:** Five days, Twelve Hours Lectures, Five ours interactive sessions
- 6. No. of Participants:** Regular/Guest Faculty Members: **30**      Research Scholars: **30**
- 7. Selection Criteria:** First come first serve basis
- 8. Registration Fees:** Regular Faculty Members: **1200 Rs.**      Guest faculty/Research Scholars: **500 Rs.**  
The payment for the registration fees can be made in the form of demand draft drawn in favour of “MMM University of Technology” payable at Gorakhpur or via Net Banking through detail given below A/C No. : **33542824744** Bank Name: **SBI** Branch Name: **MMMEC Gorakhpur** IFSC code : **SBIN0002578** Branch Code : **2578**
- 9. Accommodation:** Limited, Can be provided on payment basis

**EMERGING TRENDS IN SOFT AND FUNCTIONAL MATERIALS**  
**(ETSFM-2023) 11 Dec. -15 Dec. 2023**  
**DEPARTMENT OF PHYSICS & MATERIAL SCIENCE**  
**Madan Mohan Malaviya University of Technology, Gorakhpur, Uttar Pradesh**  
**India-273010**

**2023**

<b>LECTURE SCHEDULE DAY-1 to DAY-5 (ETSFM-2023, 11 Dec. - 15 Dec. 2023)</b>				<b>PMSD, MMMUT, GKP</b>
<b>S No</b>	<b>Date/Day</b>	<b>Lecture No.</b>	<b>Time</b>	<b>Resource Persons/Guests</b>
<b>1.</b>	<b>11 Dec. Day-1 Monday</b>	<b>Registration</b>	<b>9.00 am-09.30 am</b>	ITRC, Madan Mohan Malaviya University of Technology, Gorakhpur
		<b>Inauguration Ceremony</b>	<b>09.30 am- 10.30 am</b>	<b>Prof J P Saini, Hon'ble Vice Chancellor</b> Madan Mohan Malaviya University of Technology, Gorakhpur <b>Chief Guest &amp; Patron</b>
		<b>High Tea</b>	<b>10.30 am- 11.00 am</b>	
		<b>Keynote Address Lecture-1</b>	11.00 am- 12.30 pm	Expert-1 <b>"Crystals and Symmetry"</b> <b>Prof. Rajesh Prasad</b> Head, Department of Material Science and Engineering, IIT Delhi, New Delhi, India
		<b>Lunch Break</b>	<b>12.30 pm- 2.00 pm</b>	
		<b>Lecture-2</b>	02.00 pm- 3.00 pm	Expert-1 <b>"Anisotropic Elasticity: History, Mystery and a Caution"</b> <b>Prof. Rajesh Prasad</b> Head, Department of Material Science and Engineering, IIT Delhi, New Delhi, India
		<b>Tea Break</b>	<b>03.0 pm- 03.30 pm</b>	
		<b>Interactive Session-1</b>	03.30 pm- 04.30 pm	<b>Prof. Rajesh Prasad IITD</b>
<b>2.</b>	<b>12 Dec. Day-2 Tuesday</b>	<b>Lecture-3</b>	10.00 am- 11.00 am	Expert-2 <b>"Conventional and Unconventional Micro-nanofabrication Approaches for Sustainable Future"</b> <b>Dr. Prabhat K Dwivedi</b> Senior Scientific Officer Nanoscience Centre, IIT Kanpur
		<b>Tea Break</b>	<b>11.00 am- 11.30 am</b>	
		<b>Lecture-4</b>	11.30 pm - 12.30 pm	Expert-2 <b>"Surface –Enhanced Raman Spectroscopy (SERS) Based Biosensors: An Emerging Tool in Healthcare"</b> <b>Dr. Prabhat K Dwivedi</b> Senior Scientific Officer Nanoscience Centre, IIT Kanpur

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		<b>Lunch Break</b>	<b>12.30 pm- 02.00 pm</b>	
		<b>Lecture-5</b>	02.00 pm- 03.00 pm	Expert-3 <i>“Molecular Modeling Tools in Design and Development of Materials: Applications to Polymers Membranes and Peptides”</i> <b>Dr. Anurag Prakash Sunda</b> Department of Chemistry, J. C. Bose University of Science & Technology, YMCA, Faridabad
		<b>Tea Break</b>	<b>03.0 pm- 03.30 pm</b>	
		<b>Lecture-6</b>	03.30 pm – 4.30 pm	Expert-3 <i>“Molecular Dynamics Simulation using Gromacs Packages: Applications to Liquid Water”</i> <b>Dr. Anurag Prakash Sunda</b> Department of Chemistry, J. C. Bose University of Science & Technology, YMCA, Faridabad
3.	13 Dec. Day-3 Wednesday	<b>Lecture-7</b>	10.00 am- 11.00 am	Expert-4 <i>“Enhancement in Surface Plasmon Resonance Sensor Performance with Functional Materials for Diverse Applications”</i> <b>Prof. Yogendra K Prajapati</b> MNNIT, Prayagraj, Uttar Pradesh
		<b>Tea Break</b>	<b>11.00 am- 11.30 am</b>	
		<b>Lecture-8</b>	11.30 am - 12.30 pm	Expert-4 <i>“Utilization of Functional Materials for Improvement in Spin Dependent Shift in Optical Sensors”</i> <b>Prof. Yogendra K Prajapati</b> MNNIT, Prayagraj
		<b>Lunch Break</b>	<b>12.30 pm- 02.00 pm</b>	
		<b>Lecture-9</b>	02.00 pm- 03.00 pm	Expert-5 <i>“A Journey from Eye to Electron Microscopy”</i> <b>Prof. Anchal Srivastav</b> Department of Physics BHU, Varansi
		<b>Interactive Session-2</b>	3.0 pm-4:30 pm	<b>Prof. Y Prajapati</b>
4.	14 Dec. Day-4 Thursday	<b>Lecture-10</b>	10.00 am- 11.00 am	Expert-5 <i>“Nanotechnology: Past, Present and Future”</i> <b>Prof. Anchal Srivastav</b> Department of Physics BHU, Varansi
		<b>Tea Break</b>	<b>11.00 am- 11.30 am</b>	
		<b>Interactive Session-3</b>	11.30 am - 12.30 pm	<b>Prof. Anchal Srivastav</b>

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		<b>Lunch Break</b>	<b>12.30 pm- 02.00 pm</b>	
		<b>Lecture-11</b>	02.00 pm – 3.00 pm	<p style="text-align: center;">Expert-6  <i>“Electrical and Electrochemical Characterization Techniques”</i>  <b>Prof. Prabhakar Singh</b>                      Department of Physics                      IIT(BHU), Varanasi</p>
		<b>Interactive Session-4 &amp; Quiz</b>	03.00 pm- 04.30 pm	<p style="text-align: center;">Expert-6  <b>Prof. Prabhakar Singh</b></p>
<b>5.</b>	<b>15 Dec.</b>	<b>High Tea</b>	<b>10.00 am- 10.30 am</b>	
	<b>Day-5</b>	<b>Keynote Address</b>	10.30 am- 11.30 am	<p style="text-align: center;">Expert-6  <i>“Probing ion dynamics and charge transfer mechanism through Conductivity spectroscopy and Cyclic Voltametry”</i>  <b>Prof. Prabhakar Singh</b>                      Department of Physics                      IIT(BHU), Varanasi</p>
	<b>Friday</b>	<b>Lecture-12</b>		
		<b>Valedictory</b>	11.30 am-12.30 pm	<p style="text-align: center;"><b>Prof J P Saini, Hon’ble Vice Chancellor</b>                      Madan Mohan Malaviya University of Technology,                      Gorakhpur  <b>Chief Guest &amp; Patron</b></p>